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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/556,916	11/15/2005	Shigeyuki Akimoto	034398-004	1621

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BUCHANAN, INGERSOLL & ROONEY PC  
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EXAMINER
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VANCHY JR, MICHAEL J

ART UNIT	PAPER NUMBER
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2624

NOTIFICATION DATE	DELIVERY MODE
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11/16/2007

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/556,916	<b>Applicant(s)</b> AKIMOTO ET AL.	
	<b>Examiner</b> Michael Vanchy Jr.	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/15/2005</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 1-3, 5-7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagman, 6,959,112 B1.**

Regarding claim 1, an outer surface-inspecting method for inspecting an outer surface of an inspection area having repeated patterns through comparison with a predetermined master pattern (Fig. 1, Abstract, "...*applying a match-quality metric to only a subset of search model features and corresponding image features, the subset being uniquely determined by the pose.*"), said method comprising dividing said inspection area into a plurality of matrix-like view areas, using, as a master pattern (Fig. 4), mutually different standard pattern portions for respective different edge shapes of said inspection area contained in said divided view areas (Figs. 2A-2-2E), said standard pattern portions involving said respective edge portions, and inspecting the outer surface of the inspection area by comparing the standard pattern portions to the view

areas corresponding to the standard pattern portions (Abstract, *"The method includes, for each candidate pose of a search model of the whole pattern that results in a transformed search model that may extend beyond the boundary of the image, applying a match-quality metric to only a subset of search model features and corresponding image features, the subset being uniquely determined by the pose."*).

**Regarding claim 2**, the outer surface-inspecting method set forth in claim 1, wherein the inspection area is rectangular, said view areas are defined by dividing the rectangular inspection area in horizontal and vertical directions (Figs. 2A-2E), and said standard pattern portions comprise at least two kind of corner pattern portions each to be applied to corner portions of the inspection area and involving such edges of the inspection area as defining a corner portion (Figs. 2A and 2C, col. 6, lines 1-7, 16-24), and at least one kind of side pattern portion to be applied between the corner portions of the inspection area and containing a part of an edge between the edge portions (Figs. 2D and 2E, col. 3, lines 65-66).

**Regarding claim 3**, the outer surface-inspecting method set forth in claim 2, wherein at least two kinds of the corner pattern portions comprise four kinds of corner pattern portions to be applied to four corners of the inspection area (Figs. 2A and 2C, col. 6, lines 1-7, 16-24), respectively, said side pattern portion comprises four kinds of side pattern portions to be applied along four sides of the inspection area (Figs. 2D and 2E, col. 3, lines 65-66), respectively, said standard pattern portions further comprises one kind of a central pattern portion not containing an edge of the inspection area (Fig. 2B), and thereby said standard pattern portions comprise totally nine kinds of the standard pattern portions.

The examiner takes into account that by taking two kinds of corner patterns and side (edge) patterns it would be clear to one of ordinary skill in the art at the time of the invention to include the other corners and edges for increased accuracy in determining the pattern.

**Regarding claim 5**, a master pattern to be used for comparison with an outer surface of an inspection area having repeated patterns for the purpose of inspecting said inspection area (Fig. 1, Abstract, "...*applying a match-quality metric to only a subset of search model features and corresponding image features, the subset being uniquely determined by the pose.*"), said master pattern comprising a plurality of mutually different standard pattern portions for respectively different edge shapes of said inspection area contained in a plurality of matrix-like view areas (Figs. 2A-2-2E, 4), said view areas being obtained by dividing said inspection area, wherein the outer surface of the inspection area is to be inspected by comparing the standard pattern portions to the outer surfaces of the view areas corresponding to the respective standard pattern portions (Abstract, "*The method includes, for each candidate pose of a search model of the whole pattern that results in a transformed search model that may extend beyond the boundary of the image, applying a match-quality metric to only a subset of search model features and corresponding image features, the subset being uniquely determined by the pose.*").

**Regarding claim 6**, the master pattern set forth in claim 5, wherein the inspection area is rectangular, said view areas are defined by dividing the rectangular inspection area in horizontal and vertical directions (Figs. 2A-2E), and said standard pattern portions comprise at least two kind of corner pattern portions each to be applied to corner portions of the inspection area and involving such edges of the inspection area as defining a corner portion (Figs. 2A and 2C, col. 6, lines 1-7, 16-24), and at least one kind of side pattern portion to be applied between the corner portions of the inspection area and containing a part of an edge between the edge portions (Figs. 2D and 2E, col. 3, lines 65-66).

**Regarding claim 7**, the master pattern forth in claim 6, wherein at least two kinds of the corner pattern portions comprise four kinds of corner pattern portions to be applied to four corners of the inspection area (Figs. 2A and 2C, col. 6, lines 1-7, 16-24), respectively, said side pattern portion comprises four kinds of side pattern portions to be applied along four sides of the inspection area (Figs. 2D and 2E, col. 3, lines 65-66),

respectively, said standard pattern portions further comprises one kind of a central pattern portion not containing an edge of the inspection area (Fig. 2B), and thereby said standard pattern portions comprise totally nine kinds of the standard pattern portions.

The examiner takes into account that by taking two kinds of corner patterns and side (edge) patterns it would be clear to one of ordinary skill in the art at the time of the invention to include the other corners and edges for increased accuracy in determining the pattern. Therefore, the standard pattern would comprise at least nine kinds of standard pattern portions.

**Regarding claim 9**, an outer surface-inspecting apparatus used to inspect an outer surface of an inspection area having repeated patterns, said outer surface-inspecting apparatus comprising a master pattern (Fig. 1, Abstract, *"...applying a match-quality metric to only a subset of search model features and corresponding image features, the subset being uniquely determined by the pose."*), said master pattern comprising a plurality of mutually different standard pattern portions for respectively different edge shapes of said inspection area contained in a plurality of matrix-like view areas (Figs. 2A-2E, 4), said view areas being obtained by dividing said inspection area, wherein the outer surface of the inspection area is to be inspected by comparing the standard pattern portions to the outer surfaces of the view areas corresponding to the respective standard pattern portions (Abstract, *"The method includes, for each candidate pose of a search model of the whole pattern that results in a transformed search model that may extend beyond the boundary of the image, applying a match-quality metric to only a subset of search model features and corresponding image features, the subset being uniquely determined by the pose."*).

**4. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagman, 6,959,112 B1 and further in view of Bose et al., 5,023,917.**

**Regarding claims 4 and 8**, Wagman teaches a method for pattern recognition, however, Wagman is silent on using this method for semiconductor chips. Bose et al. teaches using a master pattern (Abstract) for pattern inspection, while using the lower left corner for matching. Therefore, taking the method of Wagman, which is an expansion of the method used in Bose et al., combined with Bose et al., would allow the method to be used on semiconductor chips. Therefore, it would be clear to one of ordinary skill in the art at the time of the invention to use the pattern inspection method used in Wagman for semiconductor chips, since semiconductor chips have a pattern which can be recognized by the Bose et al. method and thus the Wagman method for better accuracy in determining the pattern.

***Examiner's Note***

The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does

Art Unit: 2624

not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

### ***Contact***

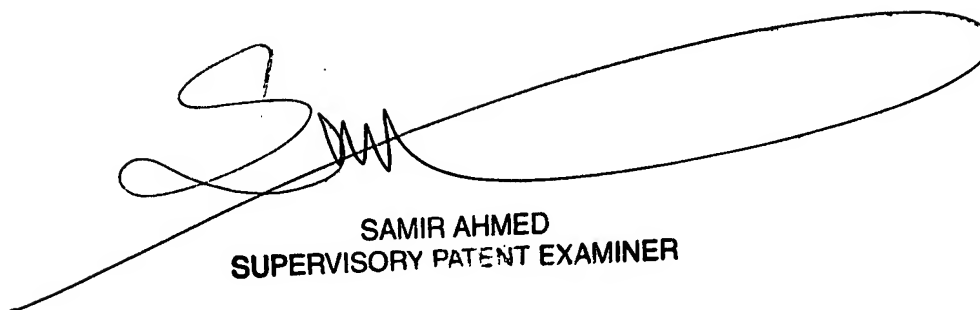
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Vanchy Jr. whose telephone number is (571) 270-1193. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael J. Vanchy Jr.  
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A handwritten signature in black ink, consisting of a large, stylized 'S' followed by a series of loops and a long horizontal stroke that ends in a large oval.

**SAMIR AHMED**  
**SUPERVISORY PATENT EXAMINER**